

***Primary Connections –
alignment with the draft
Australian Curriculum: Science***

March 2010



Australian Academy of Science

Acknowledgements

Primary**Connections** is funded by the Australian Government.

Disclaimers

The views expressed in this report do not necessarily represent the views of the Australian Academy of Science or the views of the Australian Government Department of Education, Employment and Workplace Relations.

© Australian Academy of Science 2010, Australia.

This publication is protected by the intellectual property laws of Australia and other jurisdictions and is subject to the Australian Academy of Science Education Use Licence which can be viewed at www.science.org.au/primaryconnections. By using this publication you agree that you have read the Australian Academy of Science Education Use Licence and that you agree to be bound by the terms of that Licence.

Published by the Australian Academy of Science.

GPO Box 783
Canberra ACT 2601
Telephone: (02) 6201 9403
Fax: (02) 6201 9494
Email: pc@science.org.au

www.science.org.au/primaryconnections

Primary**Connections** and the draft Australian Curriculum: Science

Primary Connections: linking science with literacy is an innovative approach to teaching and learning which aims to enhance primary school teachers' confidence and competence for teaching science.

A partnership between the Australian Academy of Science and the Australian Government Department of Education, Employment and Workplace Relations (DEEWR), Primary**Connections** focuses on assisting teachers to develop students' knowledge, skills, understanding and capacities in both science and literacy.

The draft version of the Australian Curriculum was released in March 2010 for public consultation. The Australian Curriculum aims to enhance national consistency in teaching and learning and has an increased focus on the needs of learners regardless of their school location.

The draft Australian Curriculum: Science is organised around three interrelated strands:

- Science as a Human Endeavour (SHE)
- Science Inquiry Skills (SIS)
- Science Understanding (SU).

Each strand is of equal importance (ACARA, March 2010).

How do PrimaryConnections curriculum units currently align with the draft Australian Curriculum: Science?

The existing suite of 19 Primary**Connections** units closely aligns with the draft Australian Curriculum: Science. The following pages show how the existing Primary**Connections** units are aligned with each of the three strands.

The units where alignment does not occur will be updated once the Australian Curriculum is finalised in September 2010.

The Australian Curriculum: Science emphasises an inquiry based model of teaching and learning. The Primary Connections 5Es teaching and learning model supports this approach.

The draft Australian Curriculum: Science has eight general capabilities that are included in the content descriptions and achievement standards. These general capabilities are: literacy, numeracy, information and communication technologies (ICT), thinking skills, creativity, teamwork, ethical behaviour and self-management. The Primary**Connections** inquiry-based approach to teaching and learning includes all of these capabilities as inherent components of its program.

Will the nine new units to be trialled this year align with the draft Australian Curriculum: Science?

The content covered in each unit will directly align with the draft Australian Curriculum: Science.

The words strand and content have a different meaning in the Australian Curriculum: Science compared to many states and territories. Content refers to the three interrelated strands: Science as a Human Endeavour (SHE), Science Inquiry Skills (SIS) and Science Understanding (SU). The curriculum content is described using content descriptions rather than learning outcomes as used in most previous state syllabuses.

The new units will also align with year levels as per the draft Australian Curriculum rather than stages.

For information about how Primary**Connections** units align with year levels see the attached Primary Connections Unit map.

What about the states where Year 7 students are still in primary school?

In aligning with the draft Australian Curriculum: Science, Primary**Connections** units now encompass Years K-6 with units no longer available for Year 7. Please see the attached Primary**Connections** Unit map for available units and year levels.

Teachers of Year 7 classes who are interested in using the Primary**Connections** approach might wish to use the [Unit Planner](#) located on the Primary**Connections** website for writing their own units to align with the draft Australian Curriculum: Science. See www.science.org.au/primaryconnections

Kindergarten

Content description	Staying alive	Weather in my world	What's it made of?	On the move
Science Inquiry Skills				
Recognise and identify objects and events of interest in the students' world and ask questions about them (SKSIS1)	✓	✓	✓	✓
Explore and make observations by using the senses, as appropriate, during guided investigations (SKSIS2)	✓	✓	✓	✓
Follow directions to use equipment safely (SKSIS3)		✓		✓
Describe and share observations and ideas using oral language, role play, and writing and/or drawing (SKSIS4)	✓	✓	✓	✓
Science as a Human Endeavour				
Scientists are people who explore the world around them and share information about what they find (SKSHE1)	✓	✓	✓	✓
Science Understanding				
Features and basic needs of humans and other familiar living things (SKSU1)	✓			
Ways the environment influences the daily lives of students (SKSU2)		✓		
Names and features of everyday objects and materials (SKSU3)			✓	
Ways in which objects of different shapes and sizes move (SKSU4)				✓

Year 1

Content description	Schoolyard safari	* Sky and land	Spot the difference	Sounds sensational
Science Inquiry Skills				
Explore, pose questions and make inferences and predictions about objects and events encountered (S1SIS1)	✓	TBA	✓	✓
Answer questions by participating in different types of guided investigations including manipulating materials to test what happens, making observations, sorting and using simple information sources (S1SIS2)	✓	TBA	✓	✓
Act safely when using familiar equipment and working with others (S1SIS3)	✓	TBA		✓
Collect and record data using ICT as appropriate, including measurements using informal units (S1SIS4)	✓	TBA	✓	✓
Represent and communicate observations, measurements and ideas through oral language, role play, writing and drawing (S1SIS5)	✓	TBA	✓	✓
Compare observations with predictions and use observations as evidence to support students' ideas and to answer questions posed (S1SIS7)	✓	TBA	✓	✓
Describe investigations including what went well, and where difficulties were encountered (S1SIS8)		TBA	✓	
Science as a Human Endeavour				
Scientists work by asking questions and solving problems (eg about living things) (S1SHE1)	✓	✓		✓
Science is used in everyday life (eg in caring for the local environment) (S1SHE2)	✓	✓	✓	✓
People from a range of cultures have knowledge that relates to science (eg in relation to materials, living things and the local environment) (S1SHE3)	✓	✓		✓
Science Understanding				
A variety of living things, where they are found, and how they interact with their local environment and each other (S1SU1)	✓			
Physical features of the local environment, including the sky and landscape (S1SU2)		✓		
Physical changes in everyday materials (S1SU3)			✓	
Characteristics of sounds - the ways they can be made and how they can be used (S1SU4)				✓

* **Sky and land** is in trial 2010 and will be available by mid 2011. Trial units may be subject to changes.

Year 2

Content description	* Growing and changing	Water works	* Recycling	Push pull
Science Inquiry Skills				
Explore, pose questions and make inferences and predictions about objects and events encountered (S2SIS1)	✓	✓	TBA	✓
Answer questions by participating in different types of guided investigations including manipulating materials to test what happens, making observations, sorting and using simple information sources (S2SIS2)	✓	✓	TBA	✓
Act safely when using familiar equipment and working with others (S2SIS3)			TBA	✓
Collect and record data using ICT as appropriate, including measurements using informal units (S2SIS4)	✓	✓	TBA	✓
Represent and communicate observations, measurements and ideas through oral language, role play, writing and drawing (S2SIS5)	✓	✓	TBA	✓
Compare observations with predictions and use observations as evidence to support students' ideas and to answer questions posed (S2SIS7)	✓	✓	TBA	✓
Describe investigations including what went well, and where difficulties were encountered (S2SIS8)			TBA	
Science as a Human Endeavour				
Scientists work by asking questions and solving problems (eg about using Earth's resources) (S2SHE1)	✓	✓	✓	✓
Science is used in everyday life (eg in using materials, caring for pets) (S2SHE2)	✓	✓	✓	✓
People from a range of cultures have knowledge that relates to science (eg in relation to technology, using Earth's resources) (S2SHE3)	✓	✓	✓	✓
Science Understanding				
Differences between living and non-living things (S2SU1)	✓			
Living things growing and changing, with offspring similar to parents (S2SU2)	✓			
Earth's resources, including water, and the ways they are used (S2SU3)		✓		
The observable properties of everyday materials in relation to their use (S2SU3)			✓	
Pushes and pulls as forces that make things move, stop or change shape (S2SU3)				✓

* **Growing and changing** and **Recycling** are in trial 2010 and will be available by mid 2011. Trial units may be subject to change.

Year 3

Content description	Plants in action	Spinning in space	* Runny or not	Light fantastic
Science Inquiry Skills				
Pose questions and recognise those suitable for investigations in familiar contexts and predict what might happen based on prior knowledge (S3SIS1)	✓		✓	✓
Collaboratively plan and conduct investigations including testing, making models, using surveys and information research to find answers to questions (S3SIS2)	✓		✓	✓
Recognise whether a test or comparison is fair or not (S3SIS3)	✓	✓	✓	✓
Safely use appropriate materials, tools, and equipment such as rulers, thermometers and scales to make observations and measurements (S3SIS4)	✓	✓	✓	✓
Collect and record data using ICT where appropriate, including measurements using formal units (S3SIS5)	✓	✓	✓	✓
Use a range of methods including tables and graphs to group, classify, record and represent data and to identify simple patterns and trends, using ICT where appropriate (S3SIS6)	✓	✓	✓	✓
Represent and communicate ideas and explanations using methods including diagrams, physical representations and simple reports (S3SIS7)	✓	✓	✓	✓
Compare results with predictions, suggesting possible reasons for students' findings (S3SIS8)	✓	✓	✓	✓
Reflect on the process of data collection to describe what went well and what could be improved (S3SIS9)	✓	✓	✓	✓
Science as a Human Endeavour				
The work of scientists has resulted in discoveries and inventions that we use in our day-to-day lives (S3SHE1)				✓
Science helps us to understand our world and can be used to make predictions (eg to understand living things past and present) (S3SHE2)	✓		✓	✓
People in the local community use science in a range of ways (eg in their work, in caring for plants and animals) (S3SHE3)	✓	✓	✓	✓
Science can draw on and apply knowledge and experience from a range of cultures (eg in relation to plants and animals, astronomy) (S3SHE4)	✓	✓		
Science Understanding				
The obvious structural features of plants and animals, including humans, and the functions of these features; and how the features of fossils inform understanding about living things of the past (S3SU1)	✓**			
Life cycles and reproductive processes of plants and animals (S3SU2)	✓			
Features of the day and night sky and observable changes due to Earth's rotation, including shadows, night and day (S3SU3)		✓		
The differences between liquids and solids and how they can change under different conditions (S3SU4)			✓	
Characteristics of light including sources, the way it travels, forms shadows and is reflected (S3SU5)				✓

* **Runny or not** is in trial 2010 and will be available by mid 2011. Trial units may be subject to change.

** **Plants in action** does not currently contain the study of fossils.

Year 4

Content description	* Characteristics of animals	* Weathering and erosion	Material world	Smooth moves
Science Inquiry Skills				
Pose questions and recognise those suitable for investigations in familiar contexts and predict what might happen based on prior knowledge (S4SIS1)	TBA	TBA	✓	✓
Collaboratively plan and conduct investigations including testing, making models, using surveys and information research to find answers to questions (S4SIS2)	TBA	TBA		✓
Recognise whether a test or comparison is fair or not (S4SIS3)	TBA	TBA	✓	✓
Safely use appropriate materials, tools, and equipment such as rulers, thermometers and scales to make observations and measurements (S4SIS4)	TBA	TBA	✓	✓
Collect and record data using ICT where appropriate, including measurements using formal units (S4SIS5)	TBA	TBA	✓	✓
Use a range of methods including tables and graphs to group, classify, record and represent data and to identify simple patterns and trends, using ICT where appropriate (S4SIS6)	TBA	TBA	✓	✓
Represent and communicate ideas and explanations using methods such as diagrams, physical representations and simple reports (S4SIS7)	TBA	TBA	✓	✓
Compare results with predictions, suggesting possible reasons for students' findings (S4SIS8)	TBA	TBA		✓
Reflect on the process of data collection to describe what went well and what could be improved (S4SIS9)	TBA	TBA	✓	✓
Science as a Human Endeavour				
The work of scientists has resulted in discoveries and inventions that we use in our day-to-day lives (S4SHE1)	✓	✓		
Science helps us to understand our world and can be used to make predictions (eg to explain interesting phenomena, in engineering) (S4SHE2)	✓	✓	✓	✓
People in the local community use science in a range of ways (eg in the workplace, in informing sustainable practices) (S4SHE3)	✓	✓	✓	✓
Science can draw on and apply knowledge and experience from a range of cultures (eg in relation to the natural environment, materials and technology) (S4SHE4)	✓	✓	✓	✓
Science Understanding				
Grouping living things, including humans as animals, on the basis of observable characteristics (S4SU1)	✓			
Interactions between living things in a habitat, including simple food chains in local environments (S4SU2)	✓			
Some identifiable characteristics of the Earth's surface are the result of natural processes of change, such as weathering and erosion (S4SU3)		✓		
Materials are selected for particular uses based on their various properties, such as flexibility, strength and biodegradability (S4SU4)			✓	
Forces can cause things to change speed or direction through direct contact or by acting at a distance (S4SU5)				✓

* **Characteristics of animals** and **Weathering and erosion** are in trial 2010 and will be available by mid 2011. Trial units may be subject to change.

Year 5

Content description	Marvellous micro-organisms	* Space	Package it better	It's electrifying
Science Inquiry Skills				
Identify simple questions that can be investigated scientifically and predict the outcome of an investigation (S5SIS1)	✓	TBA	✓	✓
Contribute to decisions about the investigation method to use, including using fair tests, models, information research, surveys and data from secondary sources (S5SIS2)		TBA	✓	✓
Identify the variables that should be kept the same and decide which one should be changed and which one measured in fair tests (S5SIS3)	✓	TBA	✓	
Collaboratively select equipment and materials and use them safely and appropriately, identifying potential risks (S5SIS4)	✓	TBA	✓	✓
Use a range of tools to accurately observe, measure and record data and represent it in a variety of ways including tables and graphical methods, using ICT where appropriate (S5SIS5)	✓	TBA	✓	
Identify and describe patterns or relationships in observations and data (S5SIS6)	✓	TBA		
Compare observations and data with predictions and use as evidence in developing explanations (S5SIS7)	✓	TBA	✓	✓
Use a range of forms to represent and communicate evidence, ideas and explanations including using models and reports (S5SIS8)	✓	TBA		✓
Reflect on the process of investigation to evaluate the quality of evidence and to suggest improvements to the planning of investigations (S5SIS9)	✓	TBA	✓	✓
Science as a Human Endeavour				
Science ideas and understandings change as new evidence becomes available (eg how ideas about disease and the solar system have developed) (S5SHE1)	✓	✓		✓
Science has led to changes in the way people live and its applications both influence and can be influenced by personal and community choices (eg in relation to public health, electricity usage) (S5SHE2)	✓	✓		✓
Teams of scientists are often required to work together on projects (eg in medical science, space exploration) (S5SHE3)	✓	✓		✓
Australian scientists have made a significant contribution to scientific understanding in various fields of human endeavour (eg in medicine, space exploration) (S5SHE4)	✓	✓		
Science and culture interact to influence personal and community choices (eg in making decisions about health and medicine) (S5SHE5)	✓	✓	✓	
Science Understanding				
The role of micro-organisms in areas such as human health, food and the environment (S5SU1)	✓			
The regular and predictable motions of objects in our solar system and how humans have sought to explore and understand space (S5SU2)		✓		
Some materials are composed of observable structure or parts (such as fibres, crystals, layers or grains) and structure or smaller parts can influence the overall properties of materials (S5SU3)			✓**	
Electrical energy can be transferred and transformed (S5SU4)				✓

* **Space** is in trial 2010 and will be available by mid 2011. Trial units may be subject to change.

** **Package it better** will need some minor adjustment to align more closely to this content description.

Year 6

Content description	* Life in the balance	Earthquake explorers	Change detectives	* Sustainable energy
Science Inquiry Skills				
Identify simple questions that can be investigated scientifically and predict the outcome of an investigation (S6SIS1)	✓		✓	TBA
Contribute to decisions about the investigation method to use, including using fair tests, models, information research, surveys and data from secondary sources (S6SIS2)				TBA
Identify the variables that should be kept the same and decide which one should be changed and which one measured in fair tests (S6SIS3)			✓	TBA
Collaboratively select equipment and materials and use them safely and appropriately, identifying potential risks (S6SIS4)	✓		✓	TBA
Use a range of tools to accurately observe, measure and record data and represent it in a variety of ways including tables and graphical methods, using ICT where appropriate (S6SIS5)	✓	✓	✓	TBA
Identify and describe patterns or relationships in observations and data (S6SIS6)	✓	✓	✓	TBA
Compare observations and data with predictions and use as evidence in developing explanations (S6SIS7)	✓	✓	✓	TBA
Use a range of forms to represent and communicate evidence, ideas and explanations including using models and reports (S6SIS8)	✓	✓	✓	TBA
Reflect on the process of investigation to evaluate the quality of evidence and to suggest improvements to the planning of investigations (S6SIS9)	✓		✓	TBA
Science as a Human Endeavour				
Science ideas and understandings change as new evidence becomes available (eg how ideas about resource use and sustainable energy use have developed) (S6SHE1)	✓			✓
Science has led to changes in the way people live and its applications both influence and can be influenced by personal and community choices (eg in relation to sustainable practices) (S6SHE2)	✓	✓		✓
Teams of scientists are often required to work together on projects (eg in environmental science, in researching sustainable energy sources and technologies) (S6SHE3)	✓	✓		✓
Australian scientists have made a significant contribution to scientific understanding in various fields of human endeavour (eg in agriculture, environmental science, sustainable technology) (S6SHE4)	✓			✓
Science and culture interact to influence personal and community choices (eg in making decisions about resource use and sustainable management of the environment) (S6SHE5)	✓	✓	✓	✓
Science Understanding				
Relationships between living things, including food webs, and suitability for particular habitats (S6SU1)	✓			
Human activity, such as the use and management of water, energy sources and mineral resources, can have consequences for the environment and other living things (S6SU2)				✓
The causes and effects of major natural events at the Earth's surface such as earthquakes, tsunamis and volcanic eruptions (S6SU3)		✓		
Changes to materials caused by heating, cooling or combining can be reversible or irreversible and this influences the use of materials (S6SU4)			✓	
Sustainable sources of energy, including water, solar and wind, and how they can be transformed into useful forms of energy (S6SU5)				✓

* **Life in the balance** and **Sustainable energy** are in trial 2010 and will be available by mid 2011. Trial units may be subject to change.

Unit map – PrimaryConnections, March 2010

Year	Biology	Earth and Space Science	Chemistry	Physics
Curriculum focus: Awareness of self and the local world				
K	<i>Staying alive</i> Needs for survival of people and familiar animals; the senses	<i>Weather in my world</i> Weather, its features and how it affects my daily life	<i>What's it made of?</i> Properties and uses of materials in the school environment	<i>On the move</i> Movement of humans and toys
1	<i>Schoolyard safari</i> Features, habitats and behaviour of small invertebrates	<i>Sky and land</i> Features of the local environment	<i>Spot the difference</i> Changes to observable properties of materials (eg when solids melt)	<i>Sounds sensational</i> Properties, transmission and use of sound energy
2	<i>Growing and changing</i> Life stages of living things	<i>Water works</i> Water as a natural resource: using water responsibly	<i>Recycling</i> Properties of everyday materials help determine their re-use	<i>Push pull</i> Pushes and pulls in everyday situations
Curriculum focus: Recognising questions that can be investigated scientifically and investigating them				
3	<i>Plants in action</i> Needs and life cycle of flowering plants	<i>Spinning in space</i> Size and relative movement of Earth, Sun and Moon; day and night	<i>Runny or not</i> Liquids and solids and how they can change under different conditions	<i>Light fantastic</i> Transmission and use of light energy
4	<i>Characteristics of animals</i> Grouping animals based on characteristics	<i>Weathering and erosion</i> Some characteristics of the Earth's surface are due to weathering and erosion	<i>Material world</i> Properties of materials determine their use i.e. flexibility, strength and biodegradability	<i>Smooth moves</i> Effect on motion of different sized forces acting directly and indirectly
5	<i>Marvellous micro-organisms</i> Characteristics, needs and uses of micro-organisms (eg, yeast and mould)	<i>Space</i> Human exploration and understanding of space and our solar system	<i>Package it better</i> Design and make a package to meet the criteria of a design brief	<i>It's electrifying</i> Electrical energy is stored, transferred and transformed into other forms of energy; electric circuits
6	<i>Life in the balance</i> Relationships between living things	<i>Earthquake explorers</i> Sudden changes to the Earth's surface caused by tectonic plate movement (eg, earthquakes)	<i>Change detectives</i> Physical and chemical changes to materials	<i>Sustainable energy</i> Sustainable sources of energy, including water, solar and wind

Note: Shaded boxes indicate published PrimaryConnections units. Unshaded boxes indicate units to be trialled in 2010.

